84689

S/020/60/134/004/014/023
B016/B060

11.3000

AUTHORS: Timofeyevicheva, O. A. and Pugachevich, P. P.

TITLE: The Dependence of Surface Tension in Gallium on Temperature

PERIODICAL: Doklady Akademii nauk SSSR, 1960, Vol. 134, No. 4, pp. 840 - 843

TEXT: The authors measured the surface tension σ of gallium in vacuum by the method of maximum pressure in the drop at temperatures between 30° and 500°C. An instrument was used to this effect, as described in Ref. 5 (Fig. 1). Molten gallium was filtered off from oxides, and heated up to 1000°C in a quartz apparatus. A particularly good degasification and elimination of impurities was achieved in this way. The surface tension was measured in much the same way as that of indium (Ref. 5). The paper of Ref. 6 provided the data of density at different temperatures required for calculating this tension. Results obtained from the σ measurement in gallium are given in Table 1 and Fig. 2. Equation (1) gives the dependence of gallium on temperature; this dependence is not linear. As may be seen, the temperature coefficient of the gallium surface tension is not only

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dependent on temperature, but is also peculiarly small as compared with the $d\sigma/dT$ of other metals. In the authors' opinion, the most probable cause for the nonlinearity of the surface tension as a function of temperature is to be seen in the presence of surface-active impurities. The authors succeeded in proving more clearly than has hitherto been done that the surface tension is dependent on the position in the periodic system of the elements concerned (Fig. 4). It may be seen that surface tension, density, and the reciprocal value of compressibility are a periodic function of the atomic number of the element concerned. The extremes of the above properties fall to the same groups of elements (Fig. 4). As expected, the experiment confirmed the surface tension of gallium as being higher than the σ of germanium and lower than the σ of zinc. The authors also found a confirmation of their anticipation (Ref. 5), according to which the σ of indium was bound to be about as high as the σ of cadmium and tin (Refs. 5, 27). The rules found to govern the relations between the surface tension and other properties of the elements, on the one hand, and their atomic number, on the other, point to an intimate interrelation of surface- and volume properties of matter. Mention is made

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The Dependence of Surface Tension in Gallium on Temperature

S/020/60/134/004/014/023
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of a paper by A. Frumkin and A. Gorodetskaya (Ref. 2) published in Zs. Phys. Chem., and also of papers by A. M. Korol'kov (Ref. 4), E. Kristian and Pokrovskiy (Ref. 19). There are 4 figures, 1 table, and 27 references: 12 Soviet, 4 US, 4 German, and 6 British.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences, USSR)

PRESENTED: April 27, 1960, by I. I. Chernyayev, Academician

SUBMITTED: April 24, 1960

Card 3/3

05816

5(4) SOV/76-33-10-14/45

AUTHORS: Pugachevich, P. P., Timofeyevicheva, O. A.

TITLE: Experimental Investigation of the Surface Tension of Metallic Solutions. II. Surface Tension of Highly Dilute Amalgams of Alkali Metals at 22°C

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 10, pp 2196-2201 (USSR)

ABSTRACT: The surface tension of dilute amalgams has already been investigated by Schmidt (Ref 1), V. K. Semenchenko, B. P. Bering, N. L. Pokrovskiy (Ref 2) and Convers (Ref 3). Different results were obtained. It is assumed that these differences are to be explained by the application of insufficient measuring methods. To explain the applicability of V. K. Semenchenko's theory (Ref 6) to dilute metallic solutions, the authors prepared amalgams whose surface tension remained constant and was not affected by impurities. Surface tension was measured by the method of maximum pressure in the drop by using a combined apparatus previously described (Ref 8). Calculations were made according to Cantor's equation (Ref 9). Measurements were made for dilute sodium, potassium, and cesium amalgams (Tables 1-3). Results have shown that, in accordance with the theory mention-

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SOV/76-33-10-14/45

Experimental Investigation of the Surface Tension of Metallic Solutions. II. Surface Tension of Highly Dilute Amalgams of Alkali Metals at 22°C

ed in reference 6, the surface activity of alkali metals on mercury rises from sodium to cesium, even in the range of solutions of maximum dilution. In this connection, the isothermal lines showed no break or extremes (as was found in references 1, 2, and 3). Accordingly, the solutions belong to irrational systems for which the dependence of a certain property on the composition may be represented as a continuous analytical function (according to M. A. Reshetnikov (Ref 10)). Calculations made according to equation (1) (Ref 10) are in good agreement with experimental data, contrary to those carried out according to Shishkov's equation (Ref 11). The limit surface activities G_o of alkali metals in amalgams at 22 C are arranged in the order: $G_o\ Cs > G_o\ K > G_o\ Na$. Comparison with data by P. P. Pugachevich (Ref 12) indicates that this holds up to 350 C. There are 1 figure, 3 tables, and 13 references, 9 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut obshchey i neorganicheskoy khimii imeni N. S. Kurnakova (Academy of Sciences of the USSR, Institute of General and Inorganic Chemistry imeni N.S. Kurnakov)

Card 2/3

SOV/76-33-8-34/39

28(4)

AUTHOR: Pugachevich, P. P.

TITLE: Combined Apparatus for Surface Tension Measurements of Alloys of Low Melting Metals

PERIODICAL: Zhurnal fizicheskoy khimii, 1959, Vol 33, Nr 8, pp 1880-1882 (USSR)

ABSTRACT: A combined glass apparatus (Fig 1) for investigating the surface tension σ of low-melting metal alloys forming a solid phase at room temperature was designed. By means of this apparatus it is also possible to produce greater quantities of the alloy without having to chill or open it. Alloys can be produced which differ in the composition by 10^{-6} - 10^{-7}% by weight of the admixture, and the value σ can be determined while a chemical or spectrum analysis is not necessary. Basically, the apparatus is a series of small glass vessels connected by glass tubes and fitted with the appropriate capillaries for measuring the amount of substance and the surface tension. All connecting tubes are joined by melting so that the apparatus is one whole. It is placed into a revolving thermostat after evacuation (Fig 2). The metal under investigation is placed in one of the vessels, the alloy (with the metal under investigation) of a known composition into another.

Card 1/2

SOV/76-33-8-34/39

Combined Apparatus for Surface Tension Measurements of Alloys of Low Melting Metals

When the thermostat which has been heated to the temperature desired, is turned a certain amount of the metal will flow through one capillary. Since the necessary values are known (radius of the capillary, density of the metal, etc), the surface tension of the metal may be calculated according to Cantor's equation (Ref 1). By further turning the thermostat (and with it the glass apparatus), a certain amount of the alloy is combined with a known amount of the metal, and the surface tension of this mixture is then determined in the way described above. There are 2 figures and 1 reference.

ASSOCIATION: Akademiya nauk SSSR, Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova
(Academy of Sciences USSR; Institute of General and Inorganic Chemistry imeni N. S. Kurnakov)

SUBMITTED: January 17, 1959

Card 2/2

TIMOFEYEVICHEVA, O.A.; PUGACHEVICH, P.P.

Surface tension of metallic indium. Dokl. AN SSSR 124 no.5:1093-1094 F '59. (MIRA 12:3)

1.Institut obshchey i neorganicheskoy khimii imeni N.S. Kurnakova AN SSSR. Predstavleno akademikom I.I. Chernyayevym.
(Indium) (Surface tension)

S/078/63/008/004/003/013
A059/A126

AUTHORS: Pugachevich, P.P., Nisel'son, L.A., Sokolova, T.D., Anurov, N.S.

TITLE: Density, viscosity, and surface tension of carbon tetrachloride and tin tetrachloride

PERIODICAL: Zhurnal neorganicheskoy khimii, v. 8, no. 4, 1963, 791 - 796

TEXT: The density of CCl_4 and $SnCl_4$ was measured in a sealed quartz pycnometer (Fig. 1) with a volume of about 20 cm^3 and a capillary diameter of about 2 mm. The volume expansion of quartz was taken as $1.5 \cdot 10^{-6}$ in the calculations. The correction for the vapors in the free volume of the capillary was calculated from the ideal-gas equation where the saturated-vapor pressure was determined from the equations:

$$CCl_4 \ldots \log p = \frac{-2400}{T} - 5.3 \log T + 23.6 , \quad (1)$$

and

$$SnCl_4 \ldots \log p = \frac{-1925}{T} + 7.865 . \quad (2)$$

The relative error can be about $5 \cdot 10^{-2}$%. The viscosity was measured with the somewhat modified Martin viscometer made of molybdenum glass. The capillary diameter was selected between 0.3 and 0.5 mm, and the length of tube 4 was 180 mm. The viscosity was calculated from the equation:

$$\eta = c\,(\rho_1 - \rho_v)\tau\,, \qquad (3)$$

where c is the constant of the apparatus, ρ_1 and ρ_v is the density of the liquid and the vapor, respectively, at a given temperature, and τ is the time of flow. The relative error of the viscosity determination is not in excess of 0.2%. The surface tension was measured with the setup shown in Figure 3, and calculated from the equation:

$$\sigma = \frac{1}{2} g\,(\rho_1 - \rho_v)\, r\, h_1 \left[1 - \frac{2}{3}\frac{r}{h_1} - \frac{1}{3}\frac{r^2}{h_1^2}\right], \qquad (4)$$

where g is acceleration due to gravity, r the inner radius of tube 6 at the top (in this case, r = 0.010 cm). The relative error in no case exceeded 0.2%. Equations relating density, viscosity, and surface tension of CCl_4 and $SnCl_4$ to temperature found by the least-square methods were: $\rho = 1.6287 - 0.001763\ t -$

S/078/63/008/004/003/013
A059/A126

Density, viscosity, and surface tension of ....

$- 0.00000209\ t^2$ (for CCl_4) and $\rho = 2.2789 - 0.0025437\ t - 0.00000081\ t^2$ (for $SnCl_4$); $\eta = 1.3458 - 0.022493\ t + 0.0002222\ t^2 - 0.000000946\ t^3$ (for CCl_4) and $\eta = 1.0917 - 0.01241\ t + 0.00007712\ t^2 - 0.000000193\ t^3$ (for $SnCl_4$); and $\sigma = = 29.21 - 0.1259\ t$ (for CCl_4) and $\sigma = 29.92 - 0.1134\ t$ (for $SnCl_4$). There are 5 figures and 6 tables.

ASSOCIATION: Institut obshchey i neorganicheskoy khimii Akademii nauk SSSR (Institute of General and Inorganic Chemistry of the Academy of Sciences, USSR), Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut redkometallicheskoy promyshlennosti (State Design and Planning Scientific Research Institute of the Rare Metal Industry)

SUBMITTED: August 24, 1962

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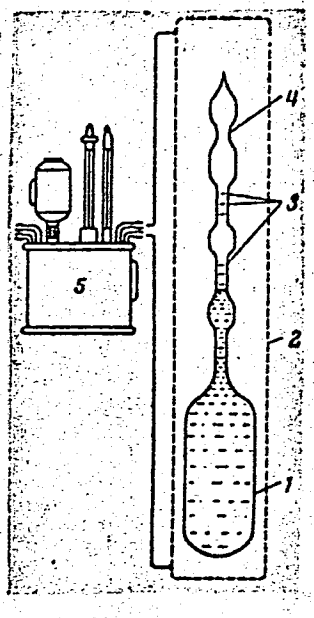
S/078/63/008/004/003/013
A059/A126

Density, viscosity, and surface tension of ....

Figure 1: Pycnometer for the determination of the density of chlorides: 1 - pycnometer; 2 - constant temperature jacket; 3 - marks; 4 - place of opening of the pycnometer; 5 - Hoeppler thermostat.



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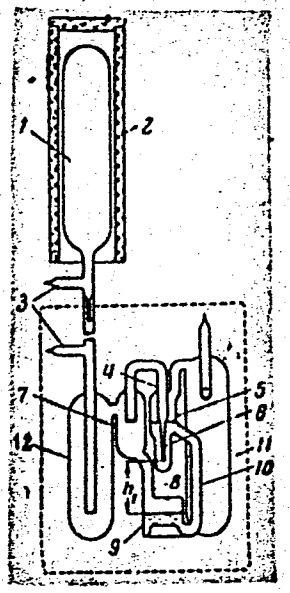
S/078/63/008/004/003/013
A059/A126

Density, viscosity, and surface tension of ....

Figure 3: Improved gas setup for the determination of the surface tension: 1 - gas cylinder; 2 - electric furnace; 3 - tube of the apparatus for liquid and gas filling; 4, 8, 10 - connecting pipe; 5 - container for tube calibration; 6 - calibrated tube; 7 - intermediate cylinder; 9 - pressure-gauge cylinder; 11 - cushioning cylinder; 12 - trap.



Card 5/5

S/076/61/035/001/017/022
B004/B060

AUTHOR: Pugachevich, P. P. (Moscow)

TITLE: Device for the measurement of the maximum pressure in gas bubbles

PERIODICAL: Zhurnal fizicheskoy khimii, v. 35, no. 1, 1961, 212-213

TEXT: A description is given of a device based upon the measurement of the maximum pressure of a gas bubble according to M. Cantor (Ref. 1), and which, due to the absence of heat-sensitive packings and cocks, is suited for high temperatures. The setup is shown in the attached figure. The operation is described as follows: after the apparatus is evacuated, the melt is filled through tube 2 into cup 1, and the device is unsoldered from the vacuum system along the lines 3 - 3 and 4 - 4. Tube 7 of container 8, which contains argon or nitrogen is then crushed by means of solenoid 5 and iron beater 6, and next, the container 8 is unsoldered along the line 10 - 10. The device is then placed into a pre-heated thermostat with windows, a description of which is given in Ref. 4. The dashed line in the figure indicates the position of the device in the

thermostat. Container 9 and electric furnace 11 are placed outside the thermostat. The device is turned through 90° counterclockwise along the yy_1 axis, and by inclining the thermostat the melt is poured from 1 into 12, whereupon the device is turned back to its initial position. By again inclining the thermostat a part of the melt is transferred from 12 into the manometer tube 13. Device then returns to initial position. The apparatus inclusive of container 9 is fastened onto a frame prior to the measurement (Ref. 4). The gas temperature in 9 is raised by the electric furnace 11. The gas expands into container 14 and into the left tube of manometer 13. Once the maximum pressure in the gas bubble forming on capillary 15 is attained, the gas bubble detaches itself and rises. The pressure is determined by measuring height H_1. This is done catheto-

metrically by measuring the distance of the menisci in the two tubes of 13 from marks 16. The surface tension is calculated in accordance with Cantor from H_1, density of liquid at the given temperature, radius of

capillary 15, depth H_2 of immersion of the capillary into the melt (cathetometrically measured distance between end of capillary 15 and liquid level in 12, referred to mark 17). For longer measurements or such at

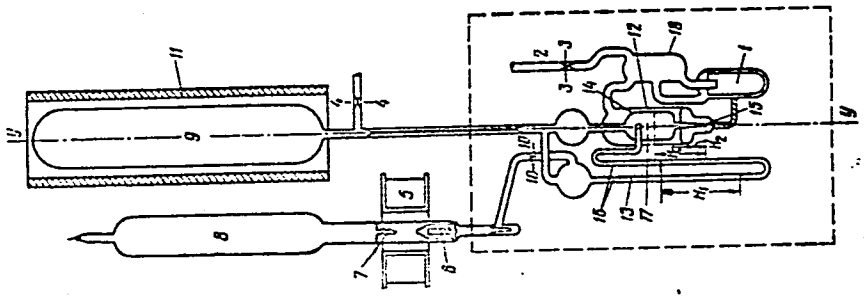
higher temperatures, 11 is lifted and the pressure between 9 and 12 is compensated by cooling off the gas in 9. Once the measurement is completed the device is turned clockwise about the yy_1 axis through 90°, the thermostat is inclined, and the melt is poured from 13 and 12 into 18, from where it flows into 1 with the return of the apparatus to initial position. There are 1 figure and 4 references: 3 Soviet-bloc.

ASSOCIATION: Akademiya nauk SSSR, Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova (Academy of Sciences USSR, Institute of General and Inorganic Chemistry imeni N. S. Kurnakov)

SUBMITTED: April 22, 1960

Device for the measurement of the ...

S/076/61/035/001/017/022
B004/B060



Card 4/4

11739
S/020/62/146/006/014/016
B107/B186

AUTHORS: Zadumkin, S. N., Pugachevich, P. P.

TITLE: Temperature dependence of the surface tension of metals

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 146, no. 6, 1962, 1363-1366

TEXT: In Fiz. met. i metalloved., v. 11, no. 3, 331 (1961) S. N. Zadumkin, calculated the temperature dependence, $d\sigma/dT$, of the surface tension of liquid metals without considering the facts that ionic vibrations are anharmonic and that the Fermi energy μ_0 is thermally smeared out. The formula presented here allows for those factors:

$$\frac{d\sigma}{dT} = -\left\{2\alpha_1\sigma + 0.81\,SD\left[\frac{R}{A} + 8T\left(\frac{k}{h}\gamma_1\bar{\Theta}\right)^2 + 24.6\,Z\,\frac{R}{A}\,\frac{kT}{\mu_0}\right]\right\}$$

, where α_1 is the coefficient of linear thermal expansion; D is the density of the liquid metal; $S = (3\sqrt{2}^{7/2})^{1/2}\,(e/a_0\,V_i)^{1/4}a_0$; R is the gas constant; Z is the mean number of free electrons per metal atom. The remaining symbols are defined in the paper cited above. The first three addends in this formula

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Temperature dependence ...

are approximately equal while the last is greater by nearly one order of magnitude. The first and third terms correspond to the anharmonic vibrations of ions as well as to the expansion of the metal and to the change in ionic energy associated therewith; the second term corresponds to the altered ionic vibrations in the transition region produced by an electron density gradient; the last term corresponds to the smearing out of the Fermi energy. Using Grüneisen's and Lindemann's approximations, the formula can be rewritten as

$$\frac{d\sigma}{dT} = -\left\{\frac{0.044\sigma}{T_S} + \frac{0.328}{V_a}\left(\frac{V_a}{Z}\right)^{1/6}\left[1 + 0.832\,\frac{T}{T_S} + 0.82\cdot 10^{-4}\left(\frac{Z}{V_a}\right)^{1/3} V_a T\right]\right\},$$

where T_S is the melting point, and V_a is the atomic volume. Table 1 shows that the experimental values of $d\sigma/dT$ are consistent with calculated data. There is 1 table.

ASSOCIATION: Kabardino-Balkarskiy gosudarstvennyy universitet (Kabardino-Balkarskiy State Univeristy). Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR

Temperature dependence ...

(Institute of General and Inorganic Chemistry imeni N. S. Kurnakov of the Academy of Sciences USSR)

PRESENTED: May 31, 1962, by I. I. Chernyayev, Academician

SUBMITTED: May 29, 1962

Legend to Table 1: (1) metal; (2) $d\sigma/dT$, $erg/cm^2 \cdot deg$; (3) calculated value; (4) experimental value.

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S/052/62/028/002/020/037
B139/B104

1.1800

AUTHORS: Pugachevich, P. P., and Lazarev, V. B.

TITLE: Tinning of high-melting metals and graphite

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 2, 1962, 208

TEXT: Oxide films and impurities are removed from band and rod profiles and other parts of tungsten, tantalum, molybdenum, and graphite which are then for some minutes kept in a vacuum furnace at $\sim 10^{-4}$ mm Hg and 1100 - 1200°C, and dipped into molten tin in the same furnace at 1100 - 1200°C. Thus, uniform tinning is guaranteed, and the parts treated can be soldered to copper parts by usual methods. Good adhesion of larger surfaces is reached by joining parts before they are dipped into molten tin under the conditions mentioned. Thus, graphite can be tinned and soldered to parts of high-melting metals by the vacuum dipping method. In tensile strength tests of such joints, cracks occur in the graphite mass. It was also possible to provide graphite with a smooth cadmium coating by vacuum dipping at 450°C. [Abstracter's note: Essentially complete translation.]

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33417
S/032/62/028/002/020/037
B139/B104

Tinning of high-melting metals...

ASSOCIATION: Institut obshchey i neorganicheskoy khimii im. N. S. Kurnakova Akademii nauk SSSR (Institute of General and Inorganic Chemistry im. N. S. Kurnakov of the Academy of Sciences SSSR)

X

Card 2/2

PUGACHEVICH, P.P.

Gaseous devices for measuring the interphase surface tension of liquids. Zav.lab. 29 no.5:622-624 '63. (MIRA 16:5)

1. Institut obshchey i neorganicheskoy khimii im. N.S.Kurnakova AN SSSR.

(Surface tension) (Chemical apparatus)

83703

17.4312
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S/190/60/002/006/005/012
B015/B064

AUTHORS: Fedotova, O. Ya., Losev, I. P., Brysin, Yu. P., Pugachevskaya, N. F.

TITLE: Synthesis and Investigation of Aromatic Polyamides

PERIODICAL: Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 6, pp. 899-903

TEXT: Aromatic cycles in the molecule of polyamides are known to increase strength, hardness, and heat resistance. In this connection it was tried to synthesize polyamides with a maximum number of aromatic cycles in the molecule. For this purpose diamines of the benzidine- and diamino diphenyl methane series and the dimethylterephthalate were used. The use of the latter is of interest since the aromatic cycle in this ester lies in the same plane as that of the diamines used, i.e., of benzidine, toluidine, 4,4'-diaminodiphenyl methane and 4,4'-diamino-3,3'-dimethyl diphenyl methane. By slowly heating the diamine melt with dimethylterephthalate in two steps (1) to 190-200°C in the inert gas current at normal pressure, and 2) at a residual pressure of 2-3 mm

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83703

Synthesis and Investigation of Aromatic Polyamides

S/190/60/002/006/008/012
B015/B064

under temperature increase) it was possible to produce some new polyamides: polydiphenyl terephthalamide, poly-3,3'-dimethyl diphenylterephthalamide, polydiphenyl methaneterephthalamide, and poly-3,3'-dimethyl diphenyl methaneterephthalamide. The polyamides have a linear structure, the one mentioned before the last is amorphous, the others crystalline. They have a high mechanical strength (according to Brinell 17-25 kg/mm^2), their melting point lies between 380°-500°C, and the values of the dependence of deformation on temperature (Fig. 3), determined with the Zhurkov device show a thermal stability of 200°-500°C. The molecular weight, that was viscosimetrically determined, amounts to 10000-14000. The polymers are not soluble in ordinary solvents, apart from tricresol and sulfuric acid. The individual data, structural formulas, and the production technique are given. There are 3 figures and 4 Soviet references.

ASSOCIATION: Moskovskiy khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva (Moscow Institute of Chemical Technology imeni D. I. Mendeleyev)

SUBMITTED: February 24, 1960

Card 2/2

LEVIT, M.S.; PUGACHEVSKAYA, Ye.F.

Data on the incidence of echinococcosis in Kiev. Med. paraz. i paraz. bol. 27 no.4:497-498 Jl-Ag '58. (MIRA 12:2)

1. Iz Kiyevskoy gorodskoy sanitarno-epidemiologicheskoy stantsii (glavnyy vrach F.I. Yuvzhenko, zavednyushchiy otdelom meditsinskoy parazitologii K.V. Prokopovich).

(ECHINOCOCCOSIS, epidemiology, in Russia (Rus))

PUGACHEVSKAYA, Ye.F.; GUZ', L.I.

Treating trichocephaliasis with heptylresocrinol. Med.paraz. i paraz. bol. 26 no.3:316 My-Je '57. (MIRA 10:11)

1. Iz Kiyevskoy gorodskoy sanitarno-epidemiologicheskoy stantsii (glavnyy vrach F.I.Yuvzhenko).
(NEMATODA) (RESORCINOL)

PUGACHEVSKIY, G.F.

Investigating the mechanical properties of shirt fabrics. Izv. vys. ucheb. zav.; tekh. tekst. prom. no.4:29-33 '63. (MIRA 16:11)

1. L'vovskiy torgovo-ekonomicheskiy institut.

PUGACHEVSKIY, G.F.

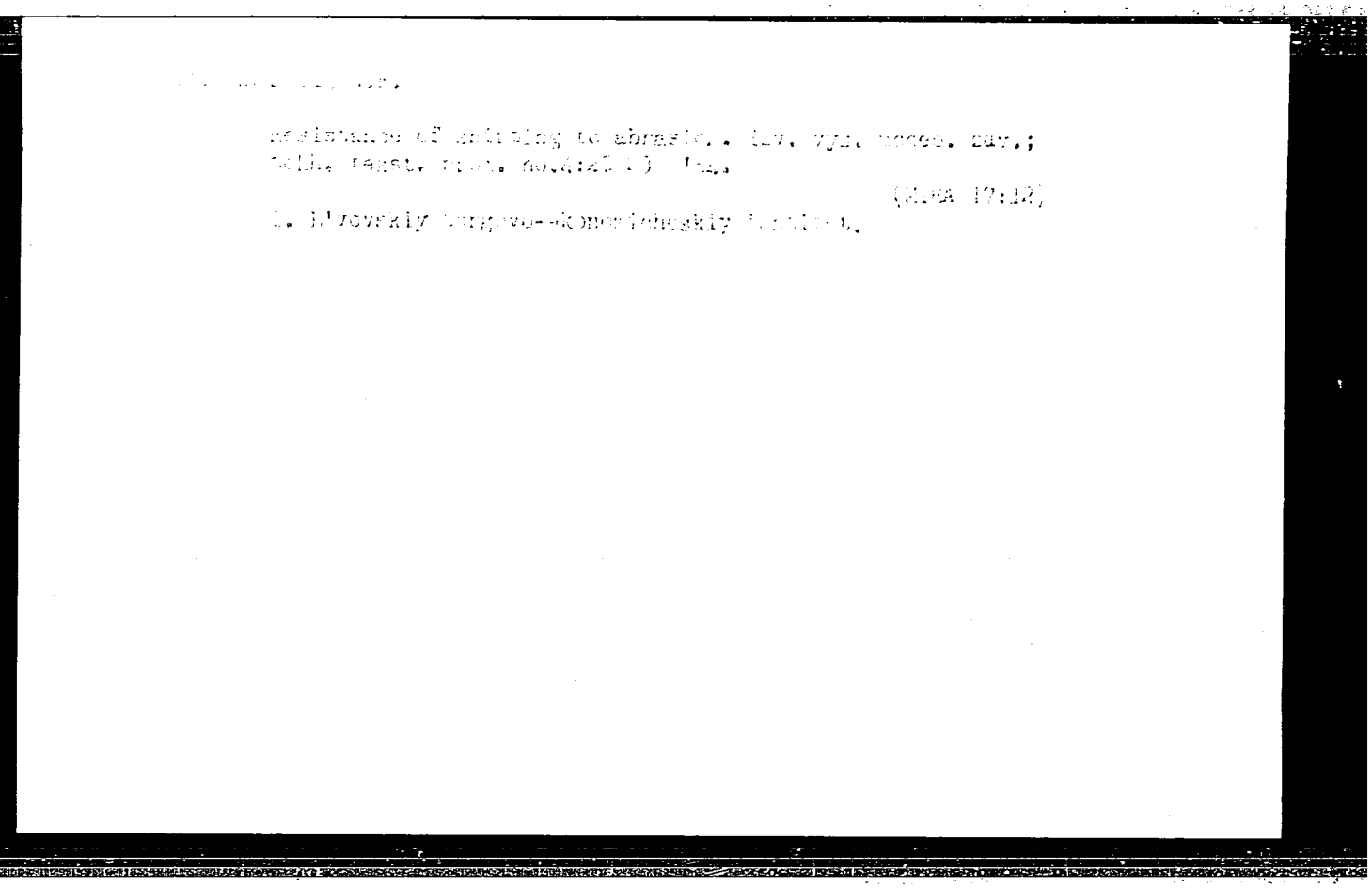
Effect of exposure to sunrays and laundering on lavsan-cotton blend fabrics. Izv. vys. ucheb. zav.; tekh. teks. prom. no.6: 13-17 '65. (MIRA 19:1)

1. L'vovskiy torgovo-ekonomicheskiy institut. Submitted July 3, 1965.

[redacted], G.F., [redacted]

Air-permeability of shirt fabrics. Tekst. prom. 24 no.2: 72-75 F '64. (MIRA 17:3)

1. Kafedra tovarovedeniya promyshlennykh tovarov L'vovskogo torgovo-ekonomicheskogo instituta.



PUGACHEVSKIY, G.F. [Puhachevs'kyi, H.F.]

Shrinkage of shirting. Leh. prom. no.3:14-16 Jl-S '64. (MIRA 17:10)

PUGACHEVSKIY, V.P.; LIKHTAREV, I.A.

Assessment of some radiotoxicological characteristics of phosphorus-32. Med. rad. 10 no.2:17-22 F '65.
(MIRA 18:6)

1. Kiyevskiy nauchno-issledovatel'skiy institut gigiyeny truda i professional'nykh zabolevaniy.

L 27574-66 EWT(m)

ACC NR: AP6018366 SOURCE CODE: UR/0241/65/010/002/0017/0022

AUTHOR: Pugachevskiy, V. P.; Likhtarev, I. A. 28 B

ORG: Kiev Scientific Research Institute of Labor Hygiene and Occupational Diseases (Kiyevskiy nauchno-issledovatel'skiy institut gigiyeny truda i profzabolevaniy) 19

TITLE: Assessing certain radiotoxicological characteristics of P sup 32

SOURCE: Meditsinskaya radiologiya, v. 10, no. 2, 1965, 17-22

TOPIC TAGS: phosphorous, radioisotope, radiology, toxicology, rat

ABSTRACT: To investigate the chronic penetration of P^{32} into the organism, the authors administered this isotope daily over a period of 100 days to white rats. The administration was peroral, in the form of an aqueous solution of $Na_2HP^{32}O_4$, in doses of 2 microcuries per day. For comparison, in order to determine the possibility of whether experiments with a single administration of P^{32} can be used to determine the amount of the isotope accumulated by tissues in chronic cases, another grop of rats was administered the same dose of P^{32} only once. The rats in both groups were killed at different periods from the beginning of the experiments, with the object of assaying their P^{32} content. The specific activity of their blood, heart, liver, lungs, adrenals, kidneys, spleen, evacuated intestine, ovary, uterus, muscle, skin, and bones was separately determined. It was found that

Card 1/2 UDC: 613.648

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ACC NR: AP6018366 O

averaging the equilibrium concentration of P^{32} for all the 10 vital organs and tissues causes the true concentration to be overestimated by more than 36% for the ovary and underestimated by 32% for the liver. Assuming that P^{32} gets uniformly distributed in the tissues of the 10 organs enumerated above, such an error is low enough for purposes of practical dosimetry. Therefore, experiments with single administration of P^{32} are adequate for approximate calculations of the dose, the absorption, and the equilibrium concentration. Orig. art. has: 7 formulas and 6 tables. /JPRS/

SUB CODE: 06 / SUBM DATE: 25Jan64 / ORIG REF: 008 / OTH REF: 003

Card 2/2 CC

KHVOYNITSKAYA, M.A.; PUGACHEVSKIY, V.P.

Hygienic evaluation of labor conditions during the use of radioactive isotopes in metallurgy. Vrach. delo no.8:93-94 Ag '60. (MIRA 13:9)

1. Radiologicheskaya laboratoriya Kiyevskogo instituta gigiyeny truda i professional'nykh zabolevaniy.
(RADIOACTIVITY--SAFETY MEASURES)
(ISOTOPES--INDUSTRIAL APPLICATIONS)

PUGACHEVSKIY, V.P.; KHVOVNITSKAYA, M.A.

Protective containers for working with radioactive substances.
Vest. rent. i rad. 35 no. 6:80 N-D '60. (MIRA 14:2)

1. Iz Kiyevskogo instituta gigiyeny truda i profzabolevaniy (direktor - dotsent L.I. Medved').
(RADIOACTIVE SUBSTANCES—SAFETY MEASURES)
(RADIATION PROTECTION)

KHVOYNITSKAYA, M.A.; PUGACHEVSKIY, V.P.

Hygienic requirements in work with continuously radioactive luminous paint. Vrach. delo no.12:126-129 D '61. (MIRA 15:1)

1. Kiyevskiy nauchno-issledovatel'skiy institut gigiyeny truda i profzabolevaniy.
(LUMINOUS PAINT) (RADIOACTIVE SUBSTANCES--TOXICOLOGY)

PUGACHEVSKIY, Yu.Ye.; PANCHIK, P.S.

Prolonging the life of blades of the machine tool designed by Nosenko. [Suggested by IU. E.Pugachevskii, P.S.Panchik]. Rats. i izobr. predl. v stroi. no. 4:19-21 '57. (MIRA 11:8)
(Metal-cutting tools)

PUGACZEWSKA, Halina

CZOPEK, Juliusz; PUGACZEWSKA, Halina; SOPOCKO, Irena

Vascularization of the respiratory surface in Triturus cristatus Laur. Fol. morph., Warsz. 5 no.2:93-104 1954.

1. Z Zakladu Zoologii Ogolnej Uniwersytetu Mikalaja Kopernika w Toruniu. Kierownik: prof. dr H.Szarski
(SALAMANDERS,
Triturus cristatus, vascularization of resp. surface)
(RESPIRATION,
vascularization of resp. surface in Triturus cristatus)

PUGACZEWSKA, Halina

Belemnites, their structure, methods of research, origin, and connection with contemporary dibranchiate cephalopods. Kosmos biol 13 no.3:220-231 '64.

[illegible], N.[illegible], [illegible]

Manufacture of [illegible] knit [illegible] on PM and sinker-wheel circular machines. Tekst. prom. 24 no.4:44-[illegible] Ap '64. (MIRA 17:6)

1. Kafedra tekhnologii trikotazhnogo proizvodstva Moskovskogo tekstil'nogo instituta (MTI).

L 48569-65 EWT(m)/EWP(j) Pc-4 RM

ACCESSION NR: AR5009906 UR/0081/65/000/004/S071/S071

15
B

SOURCE: Ref. zh. Khimiya, Abs. 4S461

AUTHOR: Li, P. Z.; Mikhaylova, Z. V.; Pugachevskaya, N. F.

TITLE: Properties of unsaturated polyesters of 1,2-propylene glycol and of transparent plastics based on them.

CITED SOURCE: Vestn. tekhn. i ekon. inform. N.-i. in-t tekhn.-ekon. issled. Gos. kom-ta khim. prom-sti pri Gosplane SSSR, vyp. 6, 1964, 16-18

TOPIC TAGS: unsaturated compound, polyester plastic, propylene glycol, transparent plastic

TRANSLATION: The properties of polyesters based on 1,2 polypropylene glycol and various quantities of maleic and phthalic anhydrides were studied as well as those of transparent plastics manufactured from these polyesters. In addition to the polyesters, the binder for these plastics contains styrene in various quantities as well as hardeners. When an initiator system of isopropyl benzene hydroperoxide and cobalt naphtnenate, the resin hardening process took 21 days, while the use of

Card 1/2

L 48569-65

ACCESSION NR: AR5009906 O

methylethyl ketone peroxide shortened it to 7 days. The optimum content of styrene in the binder was ~40%. It was found that the thermal stability for copolymers of polyesters with styrene increases with the non-saturation of the polyester, while the hardness and compressive strength of these copolymers simultaneously decreases. When the non-saturation of the polyester is low, the water resistance of the composition products is poor. The strength and bending module of elasticity for transparent plastics with a binder based on polypropylene glycol maleatephthalate were higher than those for plastics based on polypropylene glycol maleate. However, the latter composition yields a transparent plastic of maximum strength at high temperatures. Z. Ivanova.

SUB CODE: OC ENCL: 00

Card 2/2

PUGACHEVSKAYA, Ye. F.

Elimination of Taeniarhynchus infestation in Kiev. Med. paraz. i paraz. bol. 34 no. 5:570-572 S-O '65 (MIRA 19:1)

1. Otdel meditsinskoy parazitologii Kiyevskoy gorodskoy sanitarno-epidemiologicheskoy stantsii. Submitted July 28, 1964.

PUGANOV, B.N., inzh.; SEMENOVKER, I.Ye., kand. tekhn. nauk

Processes and principles of the designing of injector-type steam coolers. Teploenergetika 10 no.9:35-39 S '63. (MIRA 16:10)

1. TSentral'nyy kotloturbinnyy institut.
(Steam--Cooling)

KORNEYEV, M.I., kandidat tekhnicheskikh nauk; PUGANOV, B.N., inzhener.

Investigation of heat transfer in the flow of a vapor-fluid mixture in horizontal tubes. Teploenergetika 3 no.6:39-44 Je '56. (MLRA 9:8)

1. TSentral'nyy kotloturbinnyy institut.
(Heat--Transmission)

Puganov, B. N

AID P - 4426

Subject : USSR/Heat Engineering

Card 1/1 Pub. 110-a - 6/13

Authors : Korneyev, M. I., Kand. Tech. Sci. and B. N. Puganov, Eng.

Title : Research on heat transfer in horizontal pipes with flowing vapor-fluid mixture.

Periodical : Teploenergetika, 6, 39-44, Je 1956

Abstract : Results of research on heat transfer in horizontal tubes during the passage of a two-phase mixture of mercury vapor and magnesium amalgam. The experimental installation is described. Velocity limits for flowing vapor and water mixture in horizontal and inclined pipes is computed as well as velocity limits for magnesium amalgam. Two tables, 10 diagrams. Six Russian references, 1945-1955.

Institution : None

Submitted : No date

L 42982-65 EWT(d)/BXT/EED-2/EWP(1) Pq-4/Pg-4/Pk-4 IJP(c) BB/GG
ACCESSION NR: AP5008828 S/0317/64/000/002/0033/0036

28
B

AUTHORS: Neven, A. (Engineer, Captain); Puganov, V. (Engineer, Captain)

TITLE: Control machine

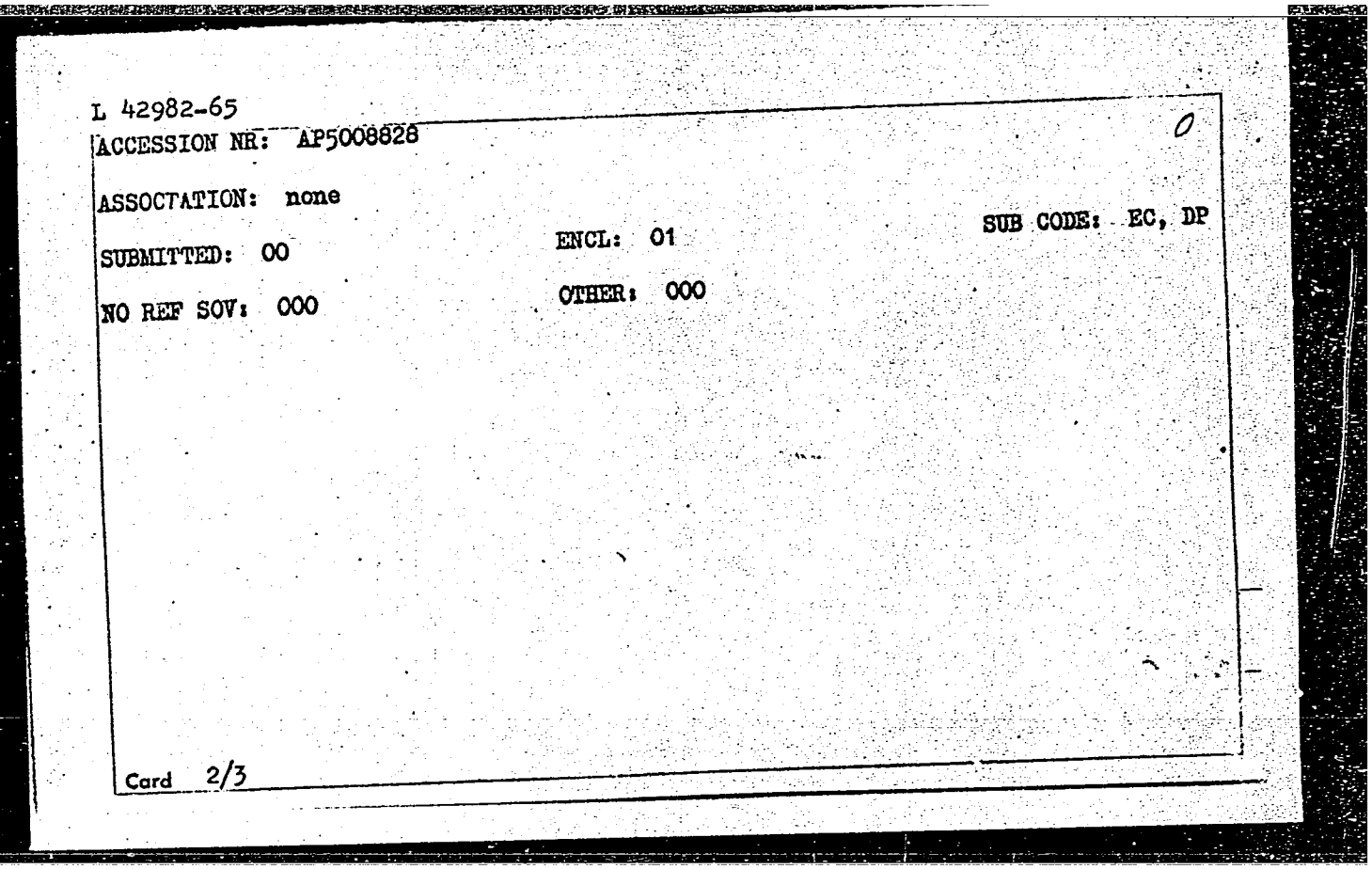
SOURCE: Tekhnika i vooruzheniye, no. 2, 1964, 33-36

TOPIC TAGS: relay system, teaching machine, education/ OM 1 teaching machine

16C

ABSTRACT: The design and functioning of the teaching machine OM-1, which is capable of receiving and quickly evaluating the answers to questions of arbitrary subject matter, are described. The device receives signals corresponding to the answers to questions, compares them to stored information, and emits a signal corresponding to a right or a wrong answer. The machine is shown in Fig. 1 on the Enclosure. Figure 2 on the Enclosure is a functional block diagram of the machine. Up to five questions can be handled in a cycle of machine use. A display tableau featuring lights as indicators of correct answers is included in the machine configuration. Recording, grading, and discarding of answers are governed by console controls. The authors briefly explain the execution of machine functions in terms of the use of electronic components. Reference is made to the circuit diagram of the machine's electronic system. Orig. art. has: 3 figures.

Card 1/3



L 42982-65

ACCESSION NR: AP5008828 0

ASSOCIATION: none

SUBMITTED: 00 ENCL: 01 SUB CODE: EC, DP

NO REF SOV: 000 OTHER: 000

Card 2/3

L 42982-65

ACCESSION NR: AP5008828

ENCLOSURE: 01

0

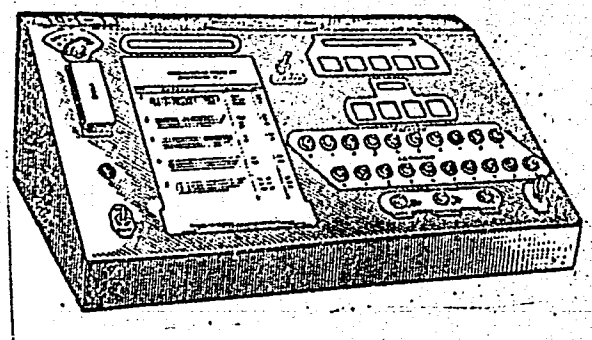


Fig. 1.

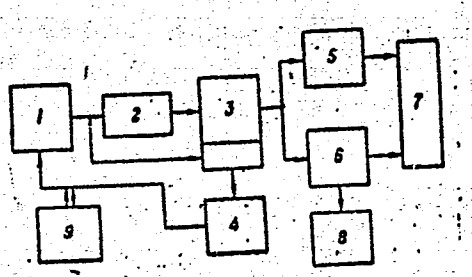


Fig. 2. Block diagram of the OM-1
1 - inlet unit; 2 - memory storage element; 3 - type I logical elements; 4 - answer computation unit; 5 - recording device; 6 - grading unit; 7 - display tableau; 8 - printing unit; 9 - time relay

mc

Card 3/3

Puganov, B.N.

2

Heat exchange to a flowing vapor-liquid mixture in horizontal tubes. M. I. Korneev and B. N. Puganov. *Teploenergetika* 5, No. 6, 38-41(1958). An experimental investigation was made where mixts. of Mg, Hg (liquid), and Hg (vapor) and H_2O-air were led through horizontal pipes. It was found that the coeff. of heat exchange through the wall depends on the amt. of heat, the inner diam. of the tubes, and the rate of flow of liquid and vapor. The flow rate at which equil. in heat exchange is established depends on the heat, tube diam., and rate of flow of vapor. It was found that the best results were obtained if the vapor flowed 2-4 m./sec. Two empirical formulas are presented, one for the Mg, Hg; the other for a steam-air mixt. If the tubes are inclined, the maximum permissible rate of flow of the liquid must be decreased. Werner Iacobson

NEVEN, A., inzhener-kapitan; PUGANOV, V., inzhener-kapitan

Control machine. Tekh. i vooruzh. no.2:33-36 F '64.
(MIRA 17:9)

PUGANOVSKIY, B.

Personnel for helicopters. Grazhd. av. 14 no.4:19 Ap '57. (MLRA 10:6)
(Helicopters)

B-2-1

BC

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Corrosion of metals during chlorination of toluene. [illegible] and [illegible] (Anilinokras. Prom., [illegible], 5, [illegible]).—Corrosion increases in the series Cr < monel metal < Fe-Cr < Cr steel < [illegible] < Pb < Pb-Te < Pb-Sb; considerable formation of tarry products is observed in all cases except those of Pb, monel metal, and Fe-Cr. R. T.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

FESUN, V.A.; PUGATS, N.Ya.

Reducing electric power consumption for main ventilation fans in Kuznetsk Basin mines. Ugol' 40 no.12:54-55 D '65. (MIRA 18:12)

1. Kombinat Kuzbassugol'.

DRAKIN, S.I.; BORISOVA, A.M.; PUGATSEVICH, V.M. (Moscow)

Determination of transport numbers in electrodiffusion in Na-Hg, K-Hg, Na-Tl, and K-Tl alloys. Zhur.fiz.khim. 37 no.1:8-12 Ja '63. (MIRA 17:3)

1. Khimiko-tekhnologicheskiy institut imeni D.I.Mendeleyeva.

PUGASHY, N.P., aspirantka; DALIDOVICH, A.S., prof., rukovoditel' raboty

New type of lined cloth made on circular knitting machines.
Tekst. prom. 24 no.2:45-51 F '64. (MIRA 17:3)

1. Kafedra tekhnologii trikotazha Moskovskogo tekstil'nogo instituta.

TSAREVSKIY, A.M.; PUGAVKO, B.I., inzh.; FOMENKO, V.N., inzh.

Excavating pumps with new working parts. Gidr. i mel. 13 no.2: 51-56 F '61. (MIRA 14:9)

1. Chlen-korrespondent Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina (for TSarevskiy).
(Excavating machinery)

S/076/63/037/001/001/029
B101/B186

AUTHORS: Drakin, S. I., Borisova, A. M., Pugatsevich, V. M. (Moscow)

TITLE: Determination of transference numbers on electrodiffusion in Na - Hg, K - Hg, Na - Tl, and K - Tl alloys

PERIODICAL: Zhurnal fizicheskoy khimii, v. 37, no. 1, 1963, 8-12

TEXT: A device for determining the transference number of an alloy that is solid at room temperature and easily affected by air and water vapor is described. 5 g of the alloy is put into a test tube of 17 mm diameter and 20 cm length, air being excluded. Then, a small vessel (0.5 ml) is enclosed in the test tube connected to it through a zigzag tube (diameter 2-2.5 mm, length 12 cm) so as to prevent convection. This inner vessel is filled with the melted alloy by suction. Test tube and inner vessel are provided with electrodes. After the experiment, the composition of the alloy in the test tube and in the inner vessel is analyzed. The concentration of the metal dissolved in the test tube remains almost constant, because the test tube is large compared with the inner vessel. The transference number n is calculated from the difference in content of dissolved metal.

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Determination of transference numbers on ... S/076/63/037/001/001/029
B101/B186

The experiments were conducted at 115 - 215°C, 2.5 - 6 a, 6 - 11 hrs. The values of n as given in a table were used to calculate the diffusion coefficients for Hg dissolved in Na or K and for Tl dissolved in Na or K from the equation $n = DKc\rho F/T$, where ρ is the resistivity, T is the absolute temperature, F is the Faraday number, c is the concentration of the metal dissolved, and K is the coefficient of electrodiffusion. The following diffusion coefficients were obtained: for Hg in Na, $D = 0.70 \cdot 10^{-4}$ cm^2/sec at 115°C; for Hg in K, $D = 1.4 \cdot 10^{-4}$ cm^2/sec at 120°C; for Tl in K, $D = 0.71 \cdot 10^{-4}$ cm^2/sec at 115°C. The thallium atoms become solvated to a higher degree in potassium than in mercury, hence the lower D values for Tl in K. There are 2 figures and 2 tables. The most important English-language reference is: P. Mangelsdorf, J. Chem. Phys., 30, 1170, 1959.

ASSOCIATION: Khimiko-tekhnologicheskiy institut im. D. I. Mendeleyeva (Institute of Chemical Technology imeni D. I. Mendeleyev)

SUBMITTED: December 2, 1960

Card 2/2

TSAREVSKIY, A.M., kandidat tekhnicheskikh nauk; PUGAVKO, B.I., inzhener

Small-sized MZU dredge. Mekh. trud. rab. 10 no.8:41-42 Ag '56.
(MLRA 9:10)

(Dredging machinery)

PUGAVKO, B. Yu.

176T57

USSR/Hydrology - Excavators

Feb 51

"New Type of Floating Excavating Pump," A. M. Tsarevskiy, B. I. Pugavko

"Gidrotekh i Meliorat" Vol III, No 2, pp 69-79

Min of Water Econ Uzbek SSR constructs series of mech irrigational and soil excavating machines PZUVNIIG and M-2, expected to be used in constr of hydro-generators in regions of Kuybyshev, Stalingrad, Main Turkmen Canal, Kakhovka on Dnepr, South-Ukraine and North-Crimea canals. Description and diagrams of machines.

PA 176T57

1. KOAREVSKIY, A. N.: PUGAVKO, B. M., Eng.

2. USSR (600)

4. Irrigation

7. Cleaning of irrigation systems by means of hydro-mechanization. Mekh. trud. rab. 6 No. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

[illegible], A. [illegible], [illegible] Yu. [illegible].

Silt

Mechanizing the cleaning of ponds and water basins from silt. Gidr. i mel. 5, No. 2, '53.

Monthly List of Russian Accessions, Library of Congress
June 1953. Uncl.

APPROVED FOR RELEASE: 06/15/2000 CIA-RDP86-00513R001343530009-3"

TSAREVSKIY, A.M., kandidat tekhnicheskikh nauk; PUGAVKO, B.I., inzhener.

Suction dredge for cleaning ponds. Nauka i zhizn' 20 no.10:38 O '53.
(MLRA 6:10)

(Dredging machinery) (Ponds)

PUGAVKO B.Yu.

TSAREVSKIY, Aleksey Mikhaylovich, kandidat tekhnicheskikh nauk; ZHILKOV, Leonid Georgiyevich, kandidat tekhnicheskikh nauk; PUGAVKO, Boris Yulianovich, inzhener-konstruktor; MOROZ, I.I., redaktor; ISLENT'YEVA, P.G., tekhnicheskiy redaktor.

[Minor hydraulic engineering equipment; new machines for the dredging of lakes, canals and small rivers] Malaia gidromekhanizatsiia; novye mashiny dlia ochistki prudov, kanalov i malykh rek. Moskva, Izd-vo "Znanie," 1954. 31 p. (Vsesoiuznoe obshchestvo po rasprostraneniiu politicheskikh i nauchnykh znanii, Ser. 4, no.23) [Microfilm]
(Dredging machinery)
(MLRA 7:11)

POPOV, A.A.; PUGAVKO, S.V., redaktor; ALEKSANDROV, L.A., redaktor; KRASNAYA, A.K., tekhnicheskiy redaktor.

[Fuel system of marine diesel engines.] Toplivnaia apparatura sudovykh dizelei; konstruktsiia i tekhnicheskaia ekspluatatsiia. Moskva, Gos.izd-vo vodnogo transporta, 1954. 226 p.
(Marine engines)(Diesel engines) (MLRA 8:3)

PLAKHOV, V.S.; PUGAVKO, S.V., doktor tekhnicheskikh nauk, professor, redaktor; SHENFEL'D, S.D., redaktor; KRASNAYA, A.K., tekhnicheskiy redaktor.

[Atlas of internal combustion engines for ships] Atlas po sudovym dvigateliam vnutrennego sgoraniia. Pod red. S.V.Pugavko. Moskva, Gos. izd-vo vodnogo transporta, 1954. 153 p. (MLRA 7:8)
(Gas and oil engines--Design) (Marine engines)

PLAKHOV, V.S.; PUGAVKO, S.V., professor, doktor tekhnicheskikh nauk, redaktor; SHENFEL'D, S.D., redaktor izdatel'stva; KRASNAYA, A.K., tekhnicheskiy redaktor.

[Internal combustion marine engines; text to atlas] Sudovye dvigateli vnytrennego sgoraniia; tekst k atlasu. Pod red. S.V.Pugavko. Moskva, Gos. izd-vo vodnogo transporta, 1954. 191 p. (MLRA 7:8)
(Gas and oil engines) (Marine engines)

AKSENOV, P.; ORLOV, G.; TSINAMDZGVARISHVILI, I.; PUGAYEVA, L., instruktor-kulinar,; NIKOLAYEV, A.

Letters to the editor. Obshchestv. pit. no. 8:15-16 Ag '58. (MIRA 11:8)

1. Nachal'nik otdela obshchestvennogo pitaniya Ministerstva torgovli GruzSSR (for TSinamdzgvarishvili). 2. Zaveduyushchiy stolovoy No. 3 Cheboksarskogo tresta stolovykh (for Nikolayev).
(Restaurants, lunchrooms, etc.)

PUGACZEWSKA, Halina

Sedimentary organisms on the rostra of the belemnites of the upper Cretaceous. Acta palaeont Pol 10 no.1:73-110 '65.

Additional observations on the Jurassic Belemnoidea of Poland. Ibid.:111-123

1. Institute of Palaeozoology of the Polish Academy of Sciences, Warsaw. Submitted August 1964.

Fugin, Aleksandr Aleksandrovich

Issledovaniye Volneniya Na Moryakh, Ozerakh I Vodokhranilishchakh Metodom Stereofotogrammetricheskoy S "Yemki
(Study of Distrubances in Seas, Lakes, and Reservoirs by Process of Stereophotogrammetric Surveying, by) A. A. Fugin I G. R. Rekhtzamer.

Leningrad, Gidrometeoizdat, 1955

[4] p. Illus., Diagrs., Graphs, Tables.

At head of title: Russia. Glavnoye Upravleniye Gidrometeorologicheskoy Sluzhby.

Bibliography: p. (192)

PUGIN, Aleksandr Aleksandrovich; REKHTZAMER, Gay Rodionovich; POPOV, I.V., redaktor; LEONOVA, B.I., redaktor; FLAUM, M.Ya., tekhnicheskiy redaktor.

[Studies of waves on seas, lakes and reservoirs by means of the stereophotogrammetry; a practical manual] Issledovanie volnenii na moriakh, ozerakh i vodokhranilishchakh metodom stereofotogrammetricheskoi s"emki; prakticheskoe posobie. Leningrad, Gidrometeorologicheskoe izd-vo, 1955. 224 p. (MLRA 8:12)
(Waves)

PUGIN, A.A.

Stereophotogrammetric method of measuring wave elements. Trudy GGI no.77:99-107 '60. (MIRA 13:5)
(Aerial photogrammetry) (Waves)

PUGIN, V.A.

Electrotensometers for measuring large deformations. Kauch.i rez. 19 no.1:24-27 Ja '60. (MIRA 13:5)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Rubber--Testing) (Strain gauges)

PUGIN, A.A.

Depth measurement by aerial stereophotogrammetric surveying.
Meteor.i gidrol. no.11:57 N '61. (MIRA 14:10)
(Aerial photogrammetry) (Submarine topography)

[illegible], A. I. [illegible]

Aerial stereophotogrammetric survey of waves on large rivers, lakes and reservoirs. Trudy GGI no.113:171-179 '64.
(MIRA 17:11)

PUGIN, A. I.

PUGIN, A. I.: "Electrothermal processes in butt-welding with resistance rods." Acad Sci USSR. Inst of Metallurgy imeni A. A. Baykov. Moscow, 1956.
(Dissertation for the Degree of Candidate in Technical Sciences).

SO: Knizhnaya Letopis', No 23, 1956

AUTHOR: Pugin, A.I. (Moscow). 24-7-3/28

TITLE: Experimental investigation of the heating of a rod by the electric current during resistance butt welding. (Eksperimental'noye issledovaniye nagreva sterzhney tokom pri svarke vstyk soprotivleniyem).

PERIODICAL: "Izvestiya Akademii Nauk, Otdeleniye Tekhnicheskikh Nauk" (Bulletin of the Ac.Sc., Technical Sciences Section), 1957, No.7, pp.14-23 (U.S.S.R.)

ABSTRACT: The here described experiments were carried out in the Institute of Metallurgy, Ac.Sc., USSR (Institut Metallurgii Akademii Nauk SSSR). There aim was: to investigate the temperature distribution inside the near contact zone of the weld joint during resistance butt welding and the changes in the temperature distribution during and after welding; to study the changes in the electric parameters during welding; to develop methods of calculation of the temperature distribution along the length of the rod towards the end of the heating and of the thermal cycle of the weld joint in accordance with the theory of heat propagation during resistance butt welding developed by Rykalin, N.N. (1); to verify experimentally the theoretical assumptions of the calculations and the selection of experimental parameters.

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Experimental investigation of the heating of a rod by the electric current during resistance butt welding. (Cont.)

24-7-3/28

The experiments were carried out on a machine fitted with threaded terminals containing massive flat contact inserts which ensure a two-way supply of current to the rods and enables fitting of specimens of 5 to 50 mm dia. To ensure equal experimental conditions, an end switch is included which switches off the current at the instant when the upsetting has reached a specified value. The upsetting and the compression force during the process of welding are recorded on a strip by means of a loop oscillograph. For transforming the linear displacements and pressures into electrical values, electrical resistance pick-ups and pneumatic pick-ups are included in the circuit. The welding current is determined from the recordings by the oscillograph of the e.m.f. of a toroid which is enveloped by the current conducting lead of the secondary circuit. The potential difference at the contact was also recorded by means of the loop oscillograph. The temperature was measured by chromel and alumel thermocouples which were connected into a circuit in such a way that the sensitivity of the galvanometers was at least 1 mm deflection of the light beam on the strip per 25 to 30 C. The main experiments were effected on low

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Experimental investigation of the heating of a rod by the electric current during resistance butt welding. (Cont.) 24-7-3/28

carbon steel (Steel 10) and silicon steel (Steel 3) but comparative experiments were also made on steel of the pearlitic class (Steels 45 and 25 H3); carbide class steels (Cr-Mn and P18 alloys); 18-6 Steels of the austenitic class. The current density varied between 1300 and 7000 A/cm^2, the specific pressure varied between 0.5 and 4 kg/cm^2, the welding time was 1 to 35 sec. In Fig.2 the change of the contact resistance as a function of the compression force is plotted for various rod diameters and current intensities; in Fig.3 the temperature in the near contact region in the case of butt resistance welding is plotted as a function of time for various distances from the weld joint; in Fig.4 the temperature in the near contact region is plotted as a function of time for welding of semi-circular specimens with a concentrated initial contact area; in Fig.5 experimental and theoretical values are plotted of the temperature distribution during resistance butt welding and also the change in the current density during the process of welding; the graphs, Figs. 6 and 7, are intended to be of assistance in calculation of the regimes during resistance butt welding. An example is included of calculating the conditions

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pertaining during resistance butt welding of rods of 25 mm dia. made of Steel 10 and the results are plotted in Fig.8 giving the thermal cycles of sections of differing distances from the point of contact, the temperature distribution along the length of the rod at the end of the welding and also the arrangement of the thermocouples during the experiment. It is stated that the calculated values are in good agreement with experimental values obtained for the same example. The author has succeeded in developing methods of calculation of the temperature distribution along the rod at the instant of termination of the welding, to calculate the thermal cycle during the stages of heating and cooling and to calculate the parameters of the regime on the assumption of the existence of an instantaneous plane additional heat source in the rod which is heated by the current. A generalised calculation parameter has been chosen, namely, the work of an instantaneously acting plane source. Experimental data were obtained relating to the change of the dimensionless work as a function of the thermo-physical properties of the welded material and these can be utilised for selecting the coefficient μ required for

Experimental investigation of the heating of a rod by the electric current during resistance butt welding. (Cont.)

24-7-3/28

calculating the processes of heat propagation during resistance butt welding.

5/5 There are 8 figures and 4 Slavic references.

SUBMITTED: December 30, 1956.

ASSOCIATION: Institute of Metallurgy Ac.Sc. USSR. (Institut Metallurgii AN SSSR).

AVAILABLE:

PUGIN, A.I.

8(2) PHASE I BOOK EXPLOITATION SOV/1855

Soveshchaniye po elektricheskim kontaktam. Moscow. 1956.

Elektricheskiye kontakty; trudy soveshchaniya (Electrical Contacts; Transactions of the Conference) Moscow, Gosenergoizdat, 1958. 303 p. 4,150 copies printed.

Editorial board: B.S. Sotskov (Resp. Ed.), V.V. Usov, R.S. Kuznetsov, I.Ye. Dekabrun, and Z.S. Kirillova; Ed.: I.Ye. Dekabrun; Tech. Ed.: K.P. Voronin.

PURPOSE: This collection of articles is intended for engineers and technicians designing, developing and operating electrical apparatus and is concerned with electric contact materials. It may also be useful in scientific research institutes and laboratories.

COVERAGE: This book comprises reports delivered at the Electric Contacts Conference held in Moscow in November, 1956. These papers cover physical processes occurring during connecting or disconnecting, methods of designing and testing electric contacts, production and characteristics of contact materials. During this conference of the Institut avtomatiki telemekhaniki AN SSSR (Institute of Automation and Telemechanics, Academy of Sciences, USSR) participants approved periodic conferences of physicists, metallurgists, chemists and apparatus design specialists to discuss problems of electric contacts, which are the components of electric apparatus primarily influencing the reliability of electric systems, especially d-c control systems. Their physical, thermal, mechanical and chemical processes have still not been well analyzed. References are given at the end of most of the reports.

Card 2/

Pugin A. I.

135-58-1-1/23

AUTHORS: Rykalin, N.N., Corresponding Member of the USSR Academy of Sciences, and Pugin, A.I., Candidate of Technical Sciences

TITLE: Calculation of Heating and Cooling of Rods in Butt Resistance Welding (Raschët nagreva i okhlazhdeniya sterzhney pri svarke vstyk soprotivleniyem)

PERIODICAL: Svarochnoye Proizvodstvo, 1958, Nr 1, pp 1 - 6 (USSR)

ABSTRACT: The authors develop methods of calculating the temperature distribution along the length of welded rods by the final stage heating and thermal cycle, in accordance with the theory of heat propagation in butt resistance welding. The tests were carried out with the MTP-150 machine. The current, potential difference between contacts, compression stress and shortening in the welding process were registered by an oscillograph. Temperature measurements were carried out by thermocouples of chromel and alumel wires, of 0.2 mm in diatmeter and were registered by a thermograph of the RP-49 type. Fundamental tests revealing the dependence of rated coefficients on the electric and mechanical regime parameters, were performed on low carbon steel (type 10 and ST.3) and silicon steel (0.45 to 0.5% Si.) samples.

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The density of current in these tests varied from 1,300 to 7,000 a/sq cm and the specific compression stress from 0.5 to 4 kg/sq mm. The welding time varied from 1 to 35 sec. The determined temperature distribution along the length of welded rods, obtained from the experiments, can be sufficiently accurately correlated with the theoretical temperature distribution. The authors describe the theory of calculating the heating process in detail. This linear process T (x,t) of heat propagation in the rod is described by a differential equation of heat conductivity with continuously operating, distributed sources. The heating process T (x,t) can easily be represented by the superposition of two independent processes T_1(xmt) + T_2 (x,t), which are caused: 1) by the source representing the work of a current uniformly distributed along the rod and slowly changing during the process (heating of a contactless rod), and 2) by the source, representing an additional work of the current concentrated at the end section during the early stage of the process. The calculation of additional temperatures for the final stage of heating is represented by monograms in (Figure 3). The authors then proceed to the calculation of regime parameters and thermal cycle. The welding regime is computed by assuming the

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contact temperature, choosing the rated coefficient (Figure 4) and determining the time of process according to the nomogram (Figure 5). Then, assuming the welding time, the density of current can be determined. Analyzing the results of the preceding theory, the authors arrive at the conclusion that the computation method of heating processes of rods, based on the linear process of liberation and propagation of heat, taking into account the concentration of the current in the end section and the linear increment of the specific metal resistance with temperatures, is in satisfactory agreement with the tests. There is 1 table, 1 figure, 5 graphs and 3 Soviet references

ASSOCIATION: Institut metallurgii imeni A.A. Baykova AN SSSR
(Institute of Metallurgy imeni A.A. Baykov of the USSR Academy of Sciences)

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Card 3/3 1. Welding 2. Heat-Propagation-Theory

PHASE I BOOK EXPLOITATION SOV/3285

Akademiya nauk SSSR. Institut metallurgii

Teplovyye protsessy pri kontaktnoy svarke; sbornik trudov laboratorii svarki metallov (Thermal Processes in Resistance Welding; Collection of Transactions of the Laboratory for the Welding of Metals) Moscow, Izd-vo AN SSSR, 1959. 277 p. Errata slip inserted. 3,000 copies printed.

Ed.: N. N. Rykalin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: G. M. Makovskiy; Tech. Ed.: G. A. Astaf'yeva.

PURPOSE: This book may be of interest to engineers and researchers interested in improving the methods and machines used for resistance welding.

COVERAGE: The material is based on work conducted at the welding laboratory of the Institute of Metallurgy, Academy of Sciences, USSR, for the purpose of investigating thermal processes in resistance welding. A number of the papers present some results of theoretical and practical investigation of the butt welding of rods and the welding of crossed rods by the electric resistance method. Spot welding of sheet metal is also mentioned. Measuring and recording procedures are explained and illustrated. The majority of experiments deal with heating, heat distribution, and the flow of current in the welded part. It is

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stated that the automation of industrial processes requires improved, specialized, and automated resistance welding processes. No personalities are mentioned. There are references, both Soviet and non-Soviet, at the end of each paper.

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28(1) PHASE I BOOK EXPLOITATION SOV/2156

Soveshchaniye po kompleksnoy mekhanizatsii i avtomatizatsii tekhnologicheskikh protsessov. 2nd, 1956.

Avtomatizatsiya mashinostroitel'nykh protsessov; /trudy soveshchaniya/, tom. 1: Goryachaya obrabotka metallov (Automation of Machine-Building Processes; Proceedings of the Conference on Over-All Mechanization and Automation of Technological Process, Vol 1: Hot Metal-Forming) Moscow, 1959. 394 p. 5,000 copies printed.

Pugin, A.I.

Sponsoring Agency: Akademiya nauk SSSR. Institut mashinovedeniya. Komissiya po tekhnologii mashinostroyeniya.

Resp. Ed.: V.I. Dikushin, Academician; Compiler: V.M. Raskatov; Ed. of Publishing House; V.A. Kotov; Tech. Ed.: I.F. Kuz'min.

PURPOSE: The book is intended for mechanical engineers and metallurgists.

COVERAGE: The transactions of the Second Conference on the Over-All Mechanization and Automation of Industrial Processes, September 25-29, 1956, have been published in three volumes. This book, Vol. I, contains articles under the general title, Hot Working of Metals. The investigations described in the book were conducted by the Sections for Automation and Hot Working of Metals, under the direction of the following scientists: casting - P.N. Aksenov, D.P. Ivanov and G.M. Orlov; forming - A.I. Tselikov, A.D. Tomlenov and V.T. Meshcherin; welding - G.A. Nikolayev, B.I. Frolov and G.A. Maslov. There are 183 references: 142 Soviet, 34 English, 6 German, and 1 French.

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SOV/135-59-4-2/18

AUTHORS: Rykalin, N. N., Corresponding Member of AS USSR;
Pugin, A. I., Candidate of Technical Sciences

TITLE: On Estimating the Intermittent Preheating of Rods by Current in Butt Welding by Fusion (Raschet preryvistogo podogreva sterzhney tokom pri svarke vstyk oplavleniyem)

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 4, pp 4 - 7 (USSR)

ABSTRACT: The heat distribution process in rod ends, being fusion welded by intermittent electric resistance preheating, was experimentally studied on carbon steel specimens in the automatic welding machine ("MSGA-300") on carbonic steels "5" and ShKh-15, 30 - 60 mm in diameter. Calculation formulae were derived and nomographs plotted for practical engineering use, i.e. calculation of the welding process parameters and the power of the auxiliary electric current. The method is additionally explained with a practical problem: welding 30 mm diameter steel "st.5" rods that are to be intermittently heated to 1300°C on the contact surface.

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SOV/135-59-4-2/18

On Estimating the Intermittent Preheating of Rods by Current in Butt Welding by Fusion.

Theoretical calculations of the process of intermittent heating proved to work satisfactorily. At intermittent preheating of rod ends to 1200 - 1300°C, with subsequent fusing of short duration, distribution of t. in the contact area, attained by the end of preheating, changes during the fusion very little, when the average quadratic preheating current density varies from 525 to 1300 a/cm^2 and the area of welded profile varies from 7 to 28 cm^2.
There are 2 nomographs, 3 graphs and 1 table.

ASSOCIATION: Institut metallurgii im.A. A. Baykova AN SSSR
(Metallurgy Institute imeni A. A. Baykov, AS USSR).

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19(a) SOV/135-59-7-14/15

AUTHOR: Pugin, A.I., Candidate of Technical Sciences

TITLE: The Influence of the Surface Effect on Steel Rod Heating During Resistance Butt Welding

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 7, pp 45-47 (USSR)

ABSTRACT: The author studies the influence of the skin effect on the temperature distribution and the change of the specific resistance of a rod made of medium steel (0.4 - 0.5% C; 0.6 - 0.8% Mn; 0.11 - 0.19% Si; 0.03% Pb) under the condition of welding heat at high alternating current densities at 50 cps. The author obtained curves for the change $\frac{\rho_{(t)}}{\rho_0}$ - ratio of the initial specific resistance ρ to the volume heat capacity ; c), and) - are temperature increase factors depending upon the area of the heated rods. These factors are required for calculating heat propagation processes and for calculating parameters of the resistance butt welding operation. There are 6 diagrams, 1 table and 1 Soviet

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SOV/135-59-7-14/15

The Influence of the Surface Effect on Steel Rod Heating During Resistance Butt Welding

Reference.

ASSOCIATION: Institut Metallurgii imeni A.A. Baykova, AN SSSR
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SOV/135-59-10-7/23

18(5)

AUTHORS: Rykalin, N.N., Corresponding Member of the AS USSR, Pugin, A.I., and Vasil'yeva, V.A., Candidates of Technical Sciences

TITLE: Heating and Cooling Studs During Buttwelding by Friction

PERIODICAL: Svarochnoye proizvodstvo, 1959, Nr 10, pp 15-18 (USSR)

ABSTRACT: The authors present a study on some regularities of the heating process by friction of round studs with equal diameters during buttwelding. When heating by friction, the heat source is concentrated within a thin layer, fitting close to the end of the friction stud (Fig.1). The specific power q_2 cal/cm^2 sec. in point A (Fig.1v) is equivalent to the rotational power at a given point: $q_2 = Mfvp$, (2), where $M = 2{,}34.10^{-2}$ cal/kgcm, that is the thermic equivalent of mechanical work. The complete thermic rotation power is expressed by the equation:

$$q = \int_0^{d/2} q_2(r)\, 2\pi\, rdr = M\frac{\pi^2 n}{15} \int_0^{d/2} f(r)p(r)r^2 dr. \qquad (3)$$

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